

CLAIMS

1. An electromechanical control unit (12) for a musical instrument having key-
pad and/or touch pad areas (102) for controlling a signal processing unit,

wherein the control unit (12) includes a surface element (101),

whereby settings and values of said signal processing unit that can be changed
by the user are controlled by touching of the surface element,

which surface element has keypad and/or touch areas (102) provided with fixed
and/or alternating symbols whereby changeable parameter values of the signal
processing unit are controlled by touching and/or by gliding on said symbol with
finger(s) or some other means,

characterised in that in order to adjust the parameter values that can be
changed by the user the control unit consists of a thin and elastic layered struc-
ture whereby touching it generates there between the electrode surfaces a
charge or voltage or capacitance change the place and/or amplitude of which is
calculated with a microprocessor or alike, and based on this information said
changeable parameter values are changed.

2. A control unit as claimed in claim 1 **characterised** in that it includes at least
one sensor matrix element (108) wherein at least part of the signal electrodes
(106) corresponding to the touch sensitive areas (102) is coupled with resistors
or capacitors (110) to each other and whereby the areas coupled to each other
have at their outermost areas (109) been coupled to preamplifiers.

3. A sensor matrix element as claimed in claim 2 **characterised** in that when a
single place is pressed the place that has been pressed can be calculated from
signals having different values at the preamplifiers due to the resistors or ca-
pacitors, whereby the signal processing unit is controlled with this information.

4. A device as claimed in claim 1 **characterised** in that based on the pressing
force the operation of the pressed area can be affected.

5. A device as claimed in claim 1 **characterised** in that in connection with the
pressing the electric charge generated between the electrodes (106, 105) lo-

cated on the outer surfaces of the transducer film is used to charge the batteries of the device.

5 6. A device as claimed in claim 1 **characterised** in that the electromechanical film (95) is an so called electret bubble film.

10 7. A device as claimed in claim 1 **characterised** in that an electronic switching circuit is applied in the signal processing unit in order to adjust the gain of the preamplifiers of the keypad or touch pad and to set the touch sensation suitable for the user.

15 8. An electronic coupling circuit as claimed in claim 7 **characterised** in that it comprises a processor for automatic adjustment of the gain of the preamplifiers with help of a mathematic algorithm.

9. An electronic coupling circuit as claimed in claim 8 **characterised** in that it comprises temperature measurement means.

20 10. A device as claimed in claim 1 **characterised** in that it is of thin and elastic material.

11. A device as claimed in claim 1 **characterised** in that a display is arranged on its outer surface.

25 12. A device as claimed in claim 11 **characterised** in that the display is of thin and elastic material.

13. A device as claimed in claim 1 **characterised** in that the electromechanical response is based on piezoelectric material arranged in for of film or paint.